

REMARKS

The Official Action of 25 March 2008 has been carefully considered and reconsideration of the application as amended is respectfully requested.

Claims 11 and 12 have been amended in accordance with the description in the specification as filed at page 37, lines 27-29 and page 45, lines 15-17 respectively. Moreover, claim 13 has been amended in accordance with the description in the specification as filed at, for example, page 18, lines 1-8 and Fig. 1 of the drawings.

Claims 14-16 have been canceled thereby removing the basis for the claim objections appearing at paragraph 2 of the Official Action and the claim rejections appearing at paragraph 4 of the Official Action. All claims as amended are respectfully considered to be sufficiently definite to satisfy the dictates of 35 USC 112, second paragraph.

Claims 13 and 16 were rejected under 35 USC 102(b) as allegedly being anticipated by Suzuki et al. The rejection to claim 16 is moot due to cancellation of the claim. Applicants respectfully traverse the rejection to claim 13.

Applicants respectfully submit that the amendments to claim 13 remove the basis for the rejection. Specifically, the cited reference does not show or suggest the claimed features of "an organic thin-film transistor comprising a

substrate and thin films of gate electrode, gate insulating film, organic semiconductor layer containing a fluorinated acene compound, and source and drain electrodes stacked on the substrate in order.” Accordingly, the reference respectfully cannot be considered to anticipate the claim as amended.

Claims 11, 14 and 15 were rejected under 35 USC 103(a) as allegedly being unpatentable over Suzuki et al in view of Shtein. The rejection to claims 14 and 15 is moot due to cancellation of these claims. Applicants respectfully traverse the rejection to claim 11.

The claimed invention is based at least in part upon Applicants’ discovery that, in the preparation of an organic thin-film transistor comprising an organic semiconductor layer on a substrate, the transistor can be provided with advantageous properties, including uniform/parallel orientation of molecules within the organic semiconductor layer and a high carrier-mobility, by the steps of controlling the temperature of the substrate and vacuum-depositing a fluorinated acene compound on the substrate. See specification at, e.g., page 14, line 5 to page 15, line 5, and page 15, line 18 to page 16, line 22. In accordance with this discovery, claim 11 requires the features: “the organic semiconductor layer is obtained by controlling temperature of the substrate to 30°C or higher and 65°C or lower and vacuum-depositing tetradecafluoropentacene (C₂₂F₁₄) on the substrate at 1×10^{-4} pascals or lower”.

In contrast, neither of the cited references shows or suggests at least the

claimed step of vacuum-depositing the recited fluorinated acene compounds on a substrate to form organic thin films with desired orientation. Indeed, Shtein, the only reference cited by the Examiner to show the controlled deposition of fluorinated acene compounds to form highly ordered polycrystalline organic films, does not show or suggest vacuum deposition. Thus, although Shtein may disclose organic vapor phase deposition occurring at a substrate temperature in the range of 2°C to 77°C and at a deposition chamber pressure in the range of 0.05 Torr to 760 Torr (approximately 6.66 Pa to 101300 Pa) in claim 2 and organic film growth at $T_8 = 50^\circ\text{C}$ and $P_{\text{dep}} = 8$ Torr in paragraph 0010, these deposition chamber pressures do not correspond to pressures in vacuum deposition as claimed. Accordingly, it would be clear to those of skill in the art that the vacuum deposition of the recited fluorinated acene compounds on a substrate is neither disclosed nor suggested in the reference.

Claims 11, 12 and 14-15 were rejected under 35 USC 103(a) as allegedly being unpatentable over Sakamoto et al in view of Shtein. The rejection to claims 14-15 is moot due to cancellation of these claims. Applicants respectfully traverse the rejection to claims 11 and 12.

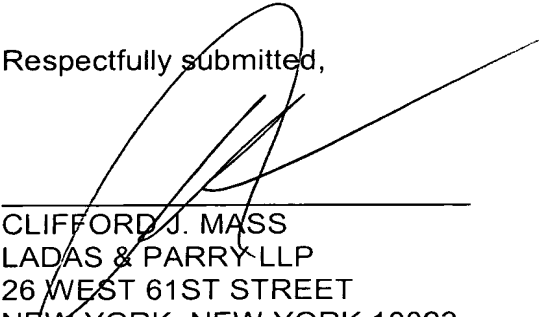
In accordance with the Applicants' discovery that, by the steps of controlling the temperature of the substrate and vacuum-depositing a fluorinated acene compound on the substrate, a transistor can be provided with the advantageous properties discussed above, the subject claims require the features of: (a) "the organic semiconductor layer is obtained by controlling

temperature of the substrate to 30°C or higher and 65°C or lower and vacuum-depositing tetradecafluoropentacene (C₂₂F₁₄) on the substrate at 1 x 10⁻⁴ pascals or lower” (claim 11) and (b) “the organic semiconductor layer is obtained by controlling temperature of the substrate to 24°C or higher and 60°C or lower and vacuum-depositing dodecafluoropentacene (C₁₈F₁₂) on the substrate at 1 x 10⁻⁴ pascals or lower” (claim 12). As discussed above, the only reference (Shtein) cited by the Examiner to show the controlled deposition of fluorinated acene compounds to form highly ordered polycrystalline organic films does not show or suggest vacuum deposition or the recited degree of vacuum. Accordingly, the cited references cannot be said to show or suggest the invention as claimed.

In the absence of anything in the cited references to show or suggest the claimed step of vacuum deposition at the recited degree of vacuum, Applicants respectfully submit that the cited references cannot be considered to set forth even a *prima facie* case of obviousness for the invention as defined in any of the claims of record. This being the case, Applicants respectfully submit that the prior art rejections of record should be withdrawn.

In view of the above, Applicants respectfully submit that all rejections and objections of record have been overcome and that the application is now in allowable form. An early notice of allowance is earnestly solicited and is believed to be fully warranted.

Respectfully submitted,



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